Quality characteristics of dehydrated raw Kelulut honey

ABSTRACT

Kelulut honey was dehydrated at 40, 55, and 70°C up to 84 h in a dehydrator. The changes of its properties and qualities in terms of moisture content, water activity, hygroscopicity, moisture adsorption isotherm, colour intensity, total phenolic content (TPC), viscosity, glass transition temperature (Tg), surface stickiness, hydroxymethylfurfural (HMF) content, and diastase activity were evaluated. The dehydration process for 18 h between temperatures of 55 and 70°C can safely produce Kelulut honey product with less than 8% moisture content and water activity below 0.6. Similar quality of Kelulut honey dehydrated at lower temperature between 40 and 55°C requires up to 36 h of dehydration. These recommended dehydration conditions were able to increase TPC of honey from 7.86% from its original value for the shorter duration of 18 h and lower dehydration temperature of 40°C and up to 70.9% for the longer duration of 36 h and higher temperature of 70°C. Dehydrated honey was darker, more viscous, and stickier. The increase of HMF content in dehydrated honey at 40 and 55°C up to 36 h was not significant which are at 0 and 5.81 mg/kg honey, respectively, and at 70°C, it was about 80 mg/kg honey. The honey was found to have very low diastase activity ranging from 0 to 0.75 DN, thereby causing its changes to be insignificant during dehydration.

Keyword: Moisture content; Water activity; Hydroxymethylfurfural content; Dehydration curv; Total phenolic content